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FACSIMILE COVER LETTER

To: Examiner Jeff H. Aftergut
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Facsimile: (571) 273-1212
From: Brian M. McGuire
Date: September 10, 2009
Re: U.S. Patent Application Serial No. 10/720,902
GROOVED SINGLE FACER BELT
Our Ref.: 930034-2041
Number of Pages: 13
(including cover page)
cc:

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Draft Response for Examiner Interview.

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U.S. Patent Application No. 10/720,902
Reply to Final Office Action mailed July 14, 2009

PATENT
930034-2041

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants : Alan L. Billings and Gregory Zilker
Serial No. : 10/720,902
For : GROOVED SINGLE FACER BELT
Filed : November 24, 2003
Examiner : Jeff H. Aftergut
Art Unit : 1791
Confirmation No. : 5301

745 Fifth Avenue
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FILED VIA EFS-WEB
ON September 10, 2009

RESPONSE TO FINAL OFFICE ACTION DATED

JULY 14, 2009

MAIL STOP AMENDMENT
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Dear Sir:

In response to the Final Office Action mailed on July 14, 2009, setting a three-month period for response ending October 14, 2009, please consider the following remarks.

A Listing of the Claims begins on page 2 of this paper.

Remarks/Arguments begin on page 6 of this paper.

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IN THE CLAIMS

Listing of claims:

Kindly amend the claims, without prejudice, without admission, without surrender of subject matter, and without any intention of creating any estoppel as to equivalents, as follows:

1. (Previously Presented) A single facer corrugator belt in combination with a corrugated paper board machine, said belt comprising:

a base structure, said base structure having an inside and an outside surface that contacts paper board and a machine or running direction and a cross machine direction, said base structure being formed by machine direction yarns and cross machine direction yarns;

a liquid polymeric resin coating applied and cured on said outside surface of said base structure, wherein said polymeric resin does not substantially impregnate the base structure and that the polymeric resin coating forms a distinct layer on said outside surface of said base structure; and

a plurality of grooves formed in said polymeric resin coating;

wherein said plurality of grooves aid in improved paper board release and increased rate of board moisture removal.

2. (Previously Presented) The combination of claim 1, wherein said grooves are continuous.

3. (Previously Presented) The combination of claim 1, wherein said grooves are discontinuous.

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4. (Previously Presented) The combination of claim 1 further comprising at least one layer of fibers needled into said base structure and extending at least partially there through.
5. (Previously Presented) The combination of claim 4, wherein the needled fibers are impregnated with polymeric resin.
6. (Previously Presented) The combination of claim 1 wherein said grooves extend partially through said polymeric resin coating, said polymeric resin coating forming an impermeable layer on said outside surface.
7. (Withdrawn) The single facer corrugator belt of claim 1, wherein said grooves extend through said polymeric resin layer forming a permeable layer on said at least one surface.
8. (Previously Presented) The combination of claim 1, wherein the base structure is woven, non-woven, knitted, mesh, braided, spiral-linked or spiral wound.
9. (Withdrawn) A single facer corrugator belt comprising: a base structure, said base structure having an inside and an outside surface and a machine or running direction and a cross machine direction, said base structure being formed by machine direction yarns and cross machine direction yarns; a polymeric resin layer formed on said base structure; and a plurality of holes formed in at least one surface of said base structure.

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10. (Withdrawn) The single facer corrugator belt of claim 9 further comprising at least one layer of fibers needled into said base structure and extending at least partially there through.

11. (Withdrawn) The single facer corrugator belt of claim 10, wherein the needled fibers are impregnated with polymeric resin.

12. (Withdrawn) The single facer corrugator belt of claim 9 wherein said holes extend partially through said polymeric resin layer, said polymeric resin layer forming an impermeable layer on said at least one surface.

13. (Withdrawn) The single facer corrugator belt of claim 9, wherein said holes extend through said polymeric resin layer forming a permeable layer on said at least one surface.

14. (Withdrawn) The single facer corrugator belt of claim 9, wherein the holes extend completely through said belt.

15. (Withdrawn) The single facer corrugator belt of claim 9, wherein the base structure is woven, non-woven, knitted, mesh, braided, spiral-linked or spiral wound.

16. (Original) The combination of claim 1 wherein said grooves are arranged in rows wherein a line intersecting the ends of each groove in a row is substantially perpendicular to the machine or cross-machine direction.

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17. (Original) The combination of claim 1 wherein said grooves are arranged in rows wherein a line intersecting the ends of each groove in a row is at an angle to the machine or cross machine direction.

18. (Original) The combination of claim 17 wherein the angle is between 25 and 30 degrees.

19. (Original) The combination of claim 1 wherein grooves are formed in staggered rows.

20. (Original) The combination of claim 1 wherein said grooves comprise a plurality of non-continuous and continuous grooves.

21. (Previously Presented) The combination of claim 1 wherein said grooves comprise a first straight portion followed by a zigzag portion, followed by a second straight portion.

22. (Original) The combination of claim 1 wherein said grooves comprise a number of first portions having a first width and a number of second portions having a second width that is smaller than the first width.

23. (Original) The combination of claim 1 wherein said grooves are shaped having an opening which is smaller than a remaining portion of the groove.

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REMARKS

Reconsideration and withdrawal of the rejection of the application are respectfully requested in view of the following remarks.

I. STATUS OF THE CLAIMS AND FORMAL MATTERS.

Claims 1-6, 8 and 16-23 are pending in this application. While no claims are amended, Applicants hereby provide a Listing of the Claims for the convenience of the Examiner.

II. THE REJECTIONS UNDER 35 U.S.C. §103

Claims 1-6, 8, and 16-23 are rejected over 35 U.S.C. §103(a) over U.S. Patent No. 6,470,944 to Billings ("Billings") in view of U.S. Patent Publication No. 2002/0102894 to Hansen ("Hansen") and U.S. Patent No. 6,428,874 to McGahern et al. ("McGahern"), and optionally further in view of EP 0 877 199 to Davenport ("Davenport") and EP 0 950 508 to Lanthier ("Lanthier"). Claims 1-6, 8, and 16-23 are rejected on the ground of non-statutory obviousness-type double patenting over claims 1-19 of Billings in view of McGahern and Hansen and further in view of Davenport and Lanthier.

Independent claim 1 recites, *inter alia*:

A single facer corrugator belt in combination with a corrugated paper board machine, said belt comprising:

a base structure, said base structure having an inside and an outside surface that contacts paper board and a machine or running direction and a cross machine direction, said base structure being formed by machine direction yarns and cross machine direction yarns;

a liquid polymeric resin coating applied and cured on said outside surface of said base structure, wherein said polymeric resin does not substantially impregnate the base structure and that

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the polymeric resin coating forms a distinct layer on said outside surface of said base structure ; and

a plurality of grooves formed in said polymeric resin coating;

wherein said plurality of grooves aid in improved paper board release and increased rate of board moisture removal.

At pages 2-3, the Office Action now argues that Billings teaches a coating upon the surface of the belt as a separate and distinct layer as a non-preferred alternative. He cites to Billings's teaching at col. 42-50:

The integrity and durability of the present single-facer belt 40 is improved by coating and impregnating the base structure 52 with a polymeric resin material. **Complete impregnation of the needed base structure 52 is preferred rather than a distinct layer on the outside of the base structure.**

Id. Col. 4, lines 42-48, emphasis on pinpoint quote of Office Action. Based on this, the Office Action alleges it would have been obvious to modify Billing's belt for the reasons explicitly set forth in the Office Action of January 7, 2008 (referred to by several incorporated references throughout the file history, hereinafter the "January '08 Office Action").

As a general matter, Applicants do not disagree that it is known to have a coating upon the surface of the belt as a separate and distinct layer. Billings, however, explains its preference for complete impregnation thus, "[t]he integrity and durability of the present single-facer belt 40 is improved by coating and impregnating the base structure 52 with a polymeric resin material." Billings thereby reasons that a lack of complete impregnation, and by extension lesser impregnation, results in a less durable, less stable single-facer corrugator belt. This alone teaches away from the claimed invention.

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The January '08 Office Action further demonstrates why the references teach away from the proffered combination. It alleges Hansen teaches a long nip press ("LNP") belt or a corrugator belt that can have grooves to temporarily store water, but admits Hansen's belt is not coated or impregnated. It cites McGahern for an LNP with a base structured with a plurality of grooves for temporarily storing water. Thus using Hansen as the "missing link," the Office Action alleges an ordinarily skilled artisan would look to McGahern's LNP belt for the grooves in the resin of Billings, because Hansen shows that the same base structure for an LNP in a paper making machine is used in a corrugator machine.

This analysis assumed Billings's belt is completely impregnated. As explained in the April 7, 2008 Response, McGahern, discloses a resin-impregnated endless belt for a LNP of the shoe type having a base structure impregnated by a polymeric resin material which renders the belt impermeable to fluids, such as oil, water and air. The grooves in this fully impregnated belt were for the temporary storage of water pressed from a paper web, and not to ease sheet release or increase board moisture removal – which is in the form of moisture laden air. Moreover, as Billings prefers complete impregnation – such as McGahern's belt – for structural integrity and durability, an ordinarily skilled artisan would not:

- modify a non-preferred distinct layer that Billing refers to only to contrast the advantages of its complete impregnation; and
- would not further compromise the supposedly deficient structural integrity and durability of a distinct layer or incomplete impregnation by incorporating grooves or holes;

for a reason that has nothing to do with a single-faced corrugator belt, nor teaches any other advantage or reason for adding grooves.

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Thus the teaching away of Billings is only amplified by McGahern. Hansen, the alleged missing link, fails to cure this deficiency and gulf between Billings and McGahern, as Hansen does not even disclose the use of a coating.

Also, Hansen's grooves are formed on the yarns of the fabric and not on an additional polymeric resin layer coated over the fabric, again *for the temporary storage of water*. Hansen, ¶0021. This disclosure clearly indicates to an ordinarily skilled artisan that the grooves are meant for LNP belts, not single-facer corrugator belts. Thus the mere fact that Hansen discloses teachings for LNPs and corrugator belts does not do enough to cure the Billings's strong teaching away from a modifying its belt with the grooves of McGahern, especially any putative embodiment with a distinct layer.

In detail, Applicants again point out that the paragraphs 15, 21 and 52 of Hansen, cited by the Office Action, show no relationship between grooves and corrugator belts. In paragraph 15, Hansen discloses a fabric used as a part of a corrugator belt, *but when referring to dewatering, Hansen refers to "other industrial settings" and not corrugator belts*. Paragraph 21 of Hansen talks of the use of grooved yarns with no application mentioned. The only grooved yarns are shown in Figure 6 and in paragraph 54, which discusses Figure 6, wherein the grooves are stated to provide for *storage of water from a cellulosic fibrous web. In other words, the grooves are used during papermaking and not in corrugator board production*. Similarly, in paragraph 52 (and 53) of Hansen, when referring to the holes in the yarn for water storage, *it is for water from a cellulosic fibrous web*. Accordingly, Hansen fails to teach using and grooved or perforated yarns in a corrugator belt, much less providing a missing link to modify Billings with McGahern to do so. Rather the yarns Hansen refers to are reinforcing yarns and dewatering yarns.

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Thus when Hansen's yarns and resultant fabric have grooves for the temporary storage of water, that structure is used for paper machine clothing ("PMC"). Looking at the text and claims of Hansen, the structure "may be used as a **reinforcing base** for a process belt or corrugator belt." Hence it is not intended to be the sheet contact surface. For example, process belts are resin impregnated carcasses (a reinforcing base). When used in this manner, one skilled in the art knows Hansen's yarns do not have to have grooves to function as the reinforcing base. The same is true when used as a reinforcing base of known corrugator belts at the time, which for the most part had either needled batt and/or a coating on top of the reinforcing base.

Finally, the January '08 Office Action alleges that Billings fabric, as modified would "aid in improved paper board release and increase rate of board moisture removal," as is claimed, largely treating it as a process limitation. Putting aside the question whether this is or is not so, the recitation demonstrates that ordinarily skilled artisans looking at the grooves of McGahern and Hansen, which are for dewatering from a web, would have no reason incorporate them into Billings's fabric for the purposes of sheet release or venting moisture. When taken together with Billing's preference for complete impregnation for structural integrity of a corrugator belt, the references teach dramatically away from the modifications mapped from the references onto the claims by the Office Action.

Nothing in the newly cited art cures these deficiencies. Davenport discloses a partially or completely impregnated calendar belt, which the Office Action cites for the general proposition of controlling the degree of coating, as well as impregnating a side with staple fiber batt. See Davenport, Abstract. Lanthier teaches a layer of polymeric resin material on a face side of a base to provide an increased co-efficient of friction. See Lanthier, Abstract, paragraphs [0034]-[0037]. Lanthier is cited to show a distinct layer to improve surface contact. Neither of the references

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deal with the issues of venting moisture laden air, paper board release, or otherwise supply any reason to overcome the contrary teachings of Billings or the silence of the remaining references. Applicants therefore request reconsideration and withdrawal of the §103 and double patenting rejections as independent claim 1 is patentable over Billings, Hansen and McGahern, and nothing in the art of record cures these deficiencies.

IV. DEPENDENT CLAIMS

The other claims are dependent from independent claim 1, discussed above, and are therefore believed patentable for at least the same reasons. Since each dependent claim is also deemed to define an additional aspect of the invention, however, the individual reconsideration of the patentability of each on its own merits is respectfully requested.

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CONCLUSION

In view of the foregoing amendments and remarks, it is believed that all of the claims in this application are patentable and Applicants respectfully requests early passage to issue of the present application.

In the event the Examiner disagrees with any of statements appearing above with respect to the disclosure in the cited reference or references, it is respectfully requested that the Examiner specifically indicate those portions of the reference or references, providing the basis for a contrary view.

Please charge any additional fees that may be needed, and credit any overpayment, to our Deposit Account No. 50-0320.

Respectfully submitted,
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